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CONCENTRATIONS OF CONTAMINANTS IN PUGET SOUND MUSSELS COMPARED TO OTHER NATIONAL MUSSEL WATCH SITES

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ABSTRACT

As part of the National Oceanic and Atmospheric Administration's National Status and Trends Program, Battelle has been collecting and analyzing mussels and sediments from approximately 25 sites on the East Coast and 50 sites on the West Coast of the United States over the past 3 years through a field project known as "Mussel Watch." Samples have been analyzed for 17 metals, PAHs, PCBs, and chlorinated pesticides. Six of the sample sites are in Puget Sound and it is the purpose of this poster to compare contaminant concentrations from these sites with those of other coastal areas. For comparative purposes, sites have been divided into four groups: the Puget Sound sites; other Northwest sites, which range from Oregon to Alaska; the California sites; and the East Coast sites, which range from Maine to New York. For each contaminant or group of contaminants, the 20 most contaminated sites are determined and the percentage from each of the four geographic areas calculated. Oysters collected at East Coast "Mussel Watch" sites from Delaware to Florida, from the Gulf Coast sites, and from sites in Hawaii were not included in the comparison due to possible species dependency of some of the contaminants.

The National Oceanic and Atmospheric Administration's National Status and Trends Program was established to measure environmental quality conditions throughout coastal and estuarine areas of the United States. A major component of this program is the "Mussel Watch" project, which is a nationwide monitoring effort based on a philosophy that determination of the level of contamination and bioavailability of contaminants in

coastal environments can be determined by measurements in bioindicators or sentinel organisms. By using bivalves as sentinel organisms, we hope to determine if general environmental conditions are getting better or worse, if these conditions approach or exceed levels that are considered harmful to living organisms, and to compare existing conditions among different estuarine and coastal areas.

Results indicate that mussels from urban bays in Puget Sound have elevated amounts of metals such as Ag, Cu, Pb, and Hg in comparison to other sites in the Northwest, but tend to have lower levels than those found in mussels from California and the East Coast (Figure 2). The results for PCB concentrating in Puget Sound mussels are similar to those found for metals. Total PAH concentrations in Puget Sound mussels are similar to those from California sites but tend to be lower than concentrations from East Coast stations. The majority of chlorinated pesticides were represented by DDT and its metabolites, which were relatively low throughout Puget Sound and in comparison to similar sites in California and on the East Coast.